AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

	1. CONTRACT ID CODE	PAGE	OF	PAGES
		1		2

2. AMENDMENT/MODIFICAITON NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicble)
0003	12 Feb 99	W45XMA82470287	

6. ISSUED BY	CODE		7. ADMINISTERED BY (If other than Item 6)	CODE	

U.S. ARMY ENGINEER DISTRICT, FTW
P.O. BOX 17300
819 TAYLOR STREET
FORT WORTH, TEXAS 76102-0300

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)	(X)	9A. AMENDMENT OF SOLICIATION NO.
		DACA63-99-R-0003
	X	9B. DATED (SEE ITEM 11)
		18 December 1998
		10A. MODIFICATION OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 11)

CODE	FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers [ ] is extended, [X] is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a)By completing items 8 and 15, and returning ___1___ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted;

or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPIRATION DATA (If required)

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS.
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE		
	A.	THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B.	THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C.	THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D.	OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return ——— copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The Solicitation for BASE OPERATIONS FACILITY, RANDOLPH AIR FORCE BASE, SAN ANTONIO, TEXAS, is amended as follows:

Add the attached Specifications, SECTION 16456, pages 16456-1 thru 16456-5, to the solicitation.

NOTE: Request for Proposal date remains "17 February 1999, 4:00 p.m. CST, as previously announced.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		(Signature of Contracting Officer)	

NSN 7540-01-152-8070
Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA FAR (48 CFR) 53.243

INSTRUCTIONS

Instructions for items other than those that are self-explanatory, are as follows:

(a) Item 1 (Contract ID Code). Insert the contract type identification code that appears in the title block of the contract being modified.

(b) Item 3 (Effective date).

   (1) For a solicitation amendment, change order, or administrative change, the effective date shall be the issue date of the amendment, change order, or administrative change.

   (2) For a supplemental agreement, the effective date shall be the date agreed to by the contracting parties.

   (3) For a modification issued as an initial or confirming notice of termination for the convenience of the Government, the effective date and the modification number of the confirming notice shall be the same as the effective date and modification number of the initial notice.

   (4) For a modification converting a termination for default to a termination for the convenience of the Government, the effective date shall be the same as the effective date of the termination for default.

   (5) For a modification confirming the contacting officer's determination of the amount due in settlement of a contract termination, the effective date shall be the same as the effective date of the initial decision.

(c) Item 6 (Issued By). Insert the name and address of the issuing office. If applicable, insert the appropriate issuing office code in the code block.

(d) Item 8 (Name and Address of Contractor). For modifications to a contract or order, enter the contractor's name, address, and code as shown in the original contract or order, unless changed by this or a previous modification.

(e) Item 9, (Amendment of Solicitation No. - Dated), and 10, (Modification of Contract/Order No. - Dated). Check the appropriate box and in the corresponding blanks insert the number and date of the original solicitation, contract, or order.

(f) Item 12 (Accounting and Appropriation Data). When appropriate, indicate the impact of the modification on each affected accounting classification by inserting one of the following entries.

   (1) Accounting classification
      Net increase $ _____

   (2) Accounting classification _____
      Net decrease $ _____

NOTE: If there are changes to multiple accounting classifications that cannot be placed in block 12, insert an asterisk and the words "See continuation sheet".

(g) Item 13. Check the appropriate box to indicate the type of modification. Insert in the corresponding blank the authority under which the modification is issued. Check whether or not contractor must sign this document. (See FAR 43.103.)

(h) Item 14 (Description of Amendment/Modification).

   (1) Organize amendments or modifications under the appropriate Uniform Contract Format (UCF) section headings from the applicable solicitation or contract. The UCF table of contents, however, shall not be set forth in this document

   (2) Indicate the impact of the modification on the overall total contract price by inserting one of the following entries:

     (i) Total contract price increased by $ ———

     (ii) Total contract price decreased by $ ———

     (iii) Total contract price unchanged.

   (3) State reason for modification.

   (4) When removing, reinstating, or adding funds, identify the contract items and accounting classifications.

   (5) When the SF 30 is used to reflect a determination by the contracting officer of the amount due in settlement of a contract terminated for the convenience of the Government, the entry in Item 14 of the modification may be limited to --

     (i) A reference to the letter determination; and

     (ii) A statement of the net amount determined to be due in settlement of the contract.

   (6) Include subject matter or short title of solicitation/contract where feasible.

(i) Item 16B. The contracting officer's signature is not required on solicitation amendments. The contracting offier's signature is normally affixed last on supplemental agreements.

STANDARD FORM 30 (REV. 10-83) BACK

SECTION 16456

VARIABLE SPEED MOTOR DRIVES

PART 1   GENERAL

1.1   RELATED DOCUMENTS

This section specifies the furnishing and installation of variable speed
motor drives to vary the speed of air handling unit fans as shown on the
drawings. The variable frequency drive (VFD) shall be of sufficient
capacity to provide an output waveform sufficient to achieve full rated
output of the fan motor as specified in Division 15. The VFD shall be
capable of operating any standard NEMA Design 8 squirrel cage induction
motor of the specified horsepower without modifications to either the motor
or the drive.

1.2   SUBMITTALS

Submit brochures on the type of drive furnished showing all power and
control wiring connections. A functional schematic shall be furnished
indicating the drive response to all exterior control signals.

PART 2   PRODUCTS

2.1   GENERAL

2.1.1   The adjustable frequency controller shall convert 460V, +10-5%, three
phase, 60 hertz utility power to adjustable voltage (0-460V) and frequency (0-
60 Hz) three phase, AC power for stepless motor speed control with a
capability of 10:1 speed range. All general options and modifications shall
mount within the standard adjustable frequency controller enclosure.

2.1.2   The adjustable frequency controller shall be space vector sine-coded,
pulse-width modulated (PWM) design.

2.1.3   The controller(s) shall be suitable for use with any standard NEMA B
squirrel-cage induction motor(s) with a 1.15 service factor.

2.1.4   Controller shall have a continuous output current rating of 110% of
motor nameplate current.

2.2   QUALITY ASSURANCE

2.2.1   The controller shall be subject to, but not limited to, the following
quality assurance controls, procedures and tests:

   a.   Power transistors, SCR's and diodes shall be tested to ensure correct
function and highest reliability.

b.   All printed circuit boards shall be tested at 50 degrees C for 50 hours. The VFD manufacturer shall provide certification that the tests have been completed.

c.   Every controller will be functionally tested under motor load to ensure that if the drive is started up according to the instruction manual provided, the unit will run properly.

2.3   SERVICE

The variable frequency drive (VFD) manufacturer shall be able to provide, as a minimum, the following services:

a.   Factory coordinated start-up service

b.   Training of user personnel in basic troubleshooting.

c.   Training shall be on-site and shall be a minimum of one day's duration and shall be performed in addition to start-up of system.

2.4   ENCLOSURE

All VFD components shall be factory mounted and wired on a dead front, grounded, free-standing or wall mounted, NEMA 1 enclosure.

2.5   BASIC FEATURES

2.5.1 The converter section of the VFD will be a full wave, three phase converter to change the AC input power to DC power.

2.5.2 The drive shall be provided with isolated 4-20mA DC output signals proportional to speed and current for remote monitoring of the VFD.

2.5.3 A speed droop feature shall be included which reduces the speed of the drive on transient overloads. The drive is to return to set speed after transient is removed. If the acceleration or deceleration rates are too rapid for the moment of inertia of the load, the drive is to automatically compensate to prevent drive trip.

2.5.4 VFD operation shall suffer no degradation in performance during a three phase 50% voltage sag for six (6) cycles. Unit shut down will not be acceptable. Test reports to verify this capability must be provided with submittals.

2.5.5 Auxiliary contact for remote indication of controller fault condition.

2.5.6 Input disconnect switch or circuit breaker interlocked with enclosure door with through-the-door handle to provide disconnect of incoming AC power. The input circuit breaker shall directly feed the VFD input transformer. If circuit breaker is furnished, it shall be rated for 30,000 AIC.

2.5.7 Door mounted key-pad and display as follows:

2.5.7.1 A door-mounted membrane keypad with integral 2-line, 24-character LCD display shall be furnished, capable of controlling the VFD and setting drive parameters, and shall include the following features:

    a.   The digital display must present all diagnostic message and parameter values in English engineering units when accessed, without the use of codes.

    b.   The keypad module shall contain a "self-test" software program which can be activated to verify proper keypad operations.

    c.   The digital keypad shall allow the operator to enter exact numerical settings in English engineering units. A plain English user menu shall be provided in software as a guide to parameter setting (rather than codes). Drive parameters shall be factory set in EEPROM and resettable in the field through the keypad. Six (6) levels of password security shall be available to protect drive parameters from authorized personnel. The EEPROM stored drive variables must be able to be transferred to new boards to reprogram spare boards.

2.5.7.2 The digital display shall display:

    a.   Speed demand in percent
    b.   Output current in amperes
    c.   Frequency
    d.   RPM
    e.   Control Mode: Manual/Automatic
    f.   Output volts
    g.   KW or KW/Hr
    h.   Elapsed time

2.5.8 Process signal inverter. Software selectable to allow speed of drive to vary inversely with input signal.

2.5.9 PID setpoint process controller with menu driven selection and programming via door-mounted keypad.

2.5.10 Pick up a spinning load. The VFD shall be able to determine the motor speed and resume control of a motor which is spinning without tripping.

2.5.11 Provide a speed profile whereby individual field adjustable settings for start, stop, entry, slope, and minimum and maximum speed points can be set to respond to the input speed signal.

2.6   PROTECTIVE CIRCUITS

2.6.1 Single phase fault or three phase short circuit on VFD output terminals without damage to any power component.

2.6.2 Static instantaneous overcurrent and overvoltage trip with inverse overcurrent protection.

2.6.3 Static overspeed (overfrequency) protection.

2.6.4 Line or fuse loss and undervoltage protection.

2.6.5 Power unit overtemperature protection.

2.6.6 Electronic motor overload protection.

2.6.7 Isolated operator controls.

2.6.8 Input line fuses.

2.6.9 Desaturation circuit to drive inverter section transistor base current to zero in event of controller fault.

2.6.10 DC bus discharge circuit for protection of operator and service personnel with indicator lamp.

2.6.11 Input line noise suppression with line reactor.

2.6.12 Individual transistor overcurrent protection.

2.7   RATING

2.7.1 The controller shall be designed and constructed to operate within the following service conditions:

   a.   Elevation - to 3,300 feet
   b.   Ambient temperature range: 0°C to 40°C
   c.   Atmosphere: Non-condensing relative humidity to 95%
   d.   AC Line Voltage Variation: -5% to +10%
   e.   AC Line Frequency Variation: ±3 hertz

PART 3 EXECUTION

3.1   OPERATION

3.1.1 The following conditions will cause an orderly shutdown of the VFD:

   a.   Loss of input power
   b.   Undervoltage
   c.   Sustained overcurrent
   d.   Instantaneous overcurrent
   e.   SCR overtemperature
   f.   Overvoltage
   g.   Blown fuse
   h.   Logic power supply failure

3.1.2 The VFD shall be software programmable to provide automatic restart after a trip condition resulting from overcurrent, overvoltage, undervoltage, overtemperature or power outage. The attempted restarts shall be programmable (0-9). The automatic restart feature will be capable of being defeated if VFD trip is desired upon first occurrence of a fault condition.

3.1.3 The VFD will have the ability to start into a motor that is spinning in the forward direction and resume normal operation upon auto-restart of the drive.

3.1.4 The drive will incorporate an energy saver circuit which will improve motor efficiency at reduced speeds.

3.1.5 Switch Position

3.1.5.1 Off Position: The VFD run circuit will be open and the system will not operate.

3.1.5.2 Manual Position: The speed of the motor will be controlled by the manual speed potentiometer.

3.1.5.3 Auto Position: Operation will be from the 4-20mA DC input signal with motor speed being linearly proportional between minimum and maximum speeds selected. Loss of the 4-20mA input signal shall cause the drive control to revert to the manual speed potentiometer.

3.2   ADJUSTMENTS

3.2.1 The controller shall have the following adjustments available, easily accessible to operating personnel:

   a.   Maximum frequency: 30 to 60 Hz
   b.   Minimum frequency" 6 to 30 Hz
   c.   Acceleration: 20 to 100 seconds
   d.   Deceleration: 20 to 100 seconds
   e.   Volts/Hertz: ±15% from 7.6 volts/Hertz

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